LLNL Site-Specific ASCI Software Quality Engineering Recommended Practices

Appendix A, Software Development Plan Guidance and Template

History of Revisions

Document Version	Revision Date	Originator(s)	Revision Description
1.0	5.9.01	Nancy Storch, *et al.*	Original release
1.1	6.22.01	R. C. Lewis	Substituted R. C. Lewis version 1.1

Software Development Plan

Introduction to Appendix A: Software Development Plan

Purpose

A software development plan (SDP) describes the development and maintenance process, product engineering practices, organization, management structure, activities performed, schedules, and resources that are used to develop software. The SDP provides management visibility, serves as a vehicle for planning and controlling the project, and describes the product engineering processes that will be applied to a software project.

Description

The SDP also serves the important purpose of describing how the LLNL site-specific ASCI Software Quality Engineering Recommended Practices will be applied to the project being planned. SDP sections correspond to the activities listed therein, and the project-specific SDP describes the activities tailored and applied to the project. An SDP may or may not include SCM and SQA activities. These activities are typically self-contained and can be described in separate plans. An example SDP format with separate SCMPs and SQAPs, and guidelines for preparing the SDP, begin on the following page.

Sections of an SDP

1) *Project organization and responsibilities* describes project organization, roles and responsibilities.
2) *Project management* describes the project management structure. It defines project objectives, assumptions, dependencies and constraints, risk management, staffing, and the ways by which project progress will be monitored, controlled, and reported.
3) *Technical process* describes the technical methods, tools, and techniques to be used.
4) *Project tasks, schedule, and estimates* specifies project activities, tasks, resource requirements, and schedules.
5) *Project process* includes the planned activities. This large list encompasses all the activities included in this document.
6) *Metrics and measurements* details the quality and process measurements to be obtained for the project, and specifies the metric data to be collected to derive the measurement.

ASCI PSE/VIEWS

Software Development Plan (SDP) Guidelines

Version 1.1
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Approvals:

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General Instructions for Use of This Template

A discussion of the use of a Software Development Plan (SDP) in the PSE/VIEWS product engineering process is provided in the PSE/VIEWS Product Engineering Process Definition and in the Project Management Process Definition Documents. This page contains general instructions for using this template to write a SDP for a particular project, and this page should be deleted from the actual project SDP.

All of the section headings should be retained as is. Text that is included in the body of this template that is not bordered, and is shown in normal font*, is recommended to be included, and is probably appropriate for most project SDPs. The final choice is up to the author as long as the final text satisfies the intent of the guidelines, and meets the approval of the SSC.*

Section-specific guidance and examples are presented throughout the body of the template in the formats shown below.

Guidance information is presented in italicized font and bordered with a solid line as shown here. This is instructional guidance information that is ***not to be retained*** *in the project SDP, and should be deleted before completing the final SDP.*

A second type of guidance information is optional text that is presented in normal font and bordered with a dotted line as shown here. This type of guidance provides one or more text options or examples for completing specific sections. The text option(s) are examples of the kind of information that could be included in the section for different project types. The author could include the example text as is, modify it and include it, or if the project is totally different than the type assumed in the example, replace it with information that is appropriate to the actual project type.

Revision History

Document Version	Revision Date	Originator(s)	Revision Description
0.1	11/3/2000	R.C. Lewis	First Draft.
0.2	11/8/2000	R.C. Lewis	Misc. corrections.
0.3	11/13/2000	R.C. Lewis	Workshop #1 inputs.
0.4	1/26/2001	R.C. Lewis	Miscellaneous Improvements,
0.5	2/23/2001	R.C. Lewis	Change to be consistent with new Proj. Planning Proc. Definition. and with changes to Prod. Eng. Proc. Def.
0.6	2/28/2001	R.C. Lewis	Changes from Workshop #2 and addition of Document Map.
1.0	6/19/2001	R.C. Lewis	Clarify guidance for Reviews and Risk Management. General improvements and changes identified in SSC reviews of Project SDPs.

Table of Contents

1 INTRODUCTION

This Software Development Plan (SDP) describes the process, practices, organization, schedules, and resources that are used on Project XYZ to develop the software identified in sections 1.2 and 1.3 below.

In addition to providing traditional project planning information, this SDP is used to tailor the standard PSE/VIEWS Product Engineering activities to fit the needs and constraints of this project. Unless stated otherwise, this project will use the standard activities and practices described in the PSE/VIEWS Process Definition documents. A cross-reference list, which maps these SDP sections to the standard activity descriptions in the Process Definition documents, is provided in Appendix A.

1.1 Purpose and Scope

The purpose of this Software Development Plan (SDP) is to provide management visibility and to serve as the vehicle for planning and controlling the project. Another important purpose is to describe how the standard PSE/VIEWS Product Engineering (PE) Process [2], and other supporting processes including SCM and SQA, will be applied to Project XYZ. This SDP supercedes all other documents in terms of how the XYZ project will be executed and managed. The Project XYZ SCM Plan and the Project XYZ SQA Plan are separate documents that describe how the SCM and SQA processes are applied to this project. Those Plans are subordinate and supplementary to this SDP, and this document supercedes those documents in the case of any conflicts.

1.2 Project Overview

Provides a brief summary of the project objectives, the product to be delivered, major work activities, major project milestones, and the relationship of this project to other projects as appropriate.

1.3 Project Deliverables

Provides a list of all items to be delivered as a result of this project, including software products, reports, specifications, and various user-oriented documents.

This SDP covers the XYZ project and includes the following software products:

- Product __
- …

1.4 Project Planning Methods

Describes how the Project Plan will be developed and approved

This Project XYZ Software Development Plan has been prepared and approved, and will be applied and maintained, using the methods prescribed in the PE Process Definition [2] and the Project Planning Process Definition [12].

1.5 References

This section lists documents that were considered in the preparation of this Software Development Plan or are referenced herein. Other related documents are listed in the PSE/VIEWS Project Planning [12], Project Tracking [13], and Product Engineering [2] Process

Definition documents. Unless explicitly stated, a reference to a document in this section does not imply or assert that this Project Plan necessarily complies with the cited reference document.

1. PSE/VIEWS Software Quality Assurance Process Definition, TBD
2. PSE/VIEWS Product Engineering Process Definition, TBD
3. PSE/VIEWS Peer Reviews Process Definition, TBD
4. PSE/VIEWS Software Quality Assurance Plan (SQAP) Guidelines, TBD
5. Project XYZ Software Quality Assurance Plan, TBD
6. Project XYZ Software Configuration Management Plan, TBD
7. PSE/VIEWS Software Configuration Management (SCM) Process Definition, TBD
8. PSE/VIEWS Software Configuration Management Plan (SCMP) Guidelines, TBD
9. PSE/VIEWS Requirements Management Process Definition, TBD
10. PSE/VIEWS Software Requirements Specification (SRS) Guidelines, TBD
11. PSE/VIEWS Peer Reviews Process Definition, TBD
12. PSE/VIEWS Project Planning Process Definition, TBD
13. PSE/VIEWS Project Tracking Process Definition, TBD

1.6 Definitions and Acronyms

This section defines special terms, abbreviations, and acronyms used in this SDP. Consult the Product Engineering Process Definition for a more comprehensive set of definitions for the terminology used in PSE/VIEWS software development and project planning.

This section may also include notational conventions.

1.6.1 Definitions

Standard Activity or *Activities*- those process activities and practices that are defined and recommended by the various PSE/VIEWS process definition documents.

Tailored Activity or Activities - the process activities and practices that are actually applied to the XYZ project. The tailored activities result from adapting (tailoring) the *standard activities* to fit the constraints and realities of this project.

1.6.2 Acronyms

SQA – Software Quality Assurance
SQE – Software Quality Engineering
SPI – Software Process Improvement
SSC – SPI Steering Committee
SW – Software
PRD - Product Requirements Definition
SDP - Software Development Plan
SQAP - SQA Plan
SCM - Software Configuration Management
SCMP - SCM Plan
SDD - Software Design Description
SRS - Software Requirements Specification

2 PROJECT ORGANIZATION and RESPONSIBILITIES

This section describes the project organization, roles and responsibilities that will be used to execute Project XYZ. The organization and responsibilities described here result from a project-specific tailoring of the general organization and responsibilities that are described in the PSE/VIEWS Product Engineering (PE) Process Definition [2].

2.1 Project Organization

Most projects will use variations of the organizational structure described in the PE Process Definition. This subsection should reference that document and specify any project-specific variations of the structure using either a narrative description or a revision of the organizational chart shown below.

The most straightforward method is to modify the chart so that it includes only the roles that are applicable to the project, and to identify the particular project people, who serve in those roles, in section 2.2.

A simplified view of the organizational structure that will be used to execute and support Project XYZ is shown in figure 2-1. The positions shown are generic roles. The generic roles are defined in the PE Process Definition. In the diagram, vertical position indicates a general level of authority, a solid connecting line indicates a supervisory/subordinate relationship, and a dotted connecting line indicates a collaborative consulting relationship.

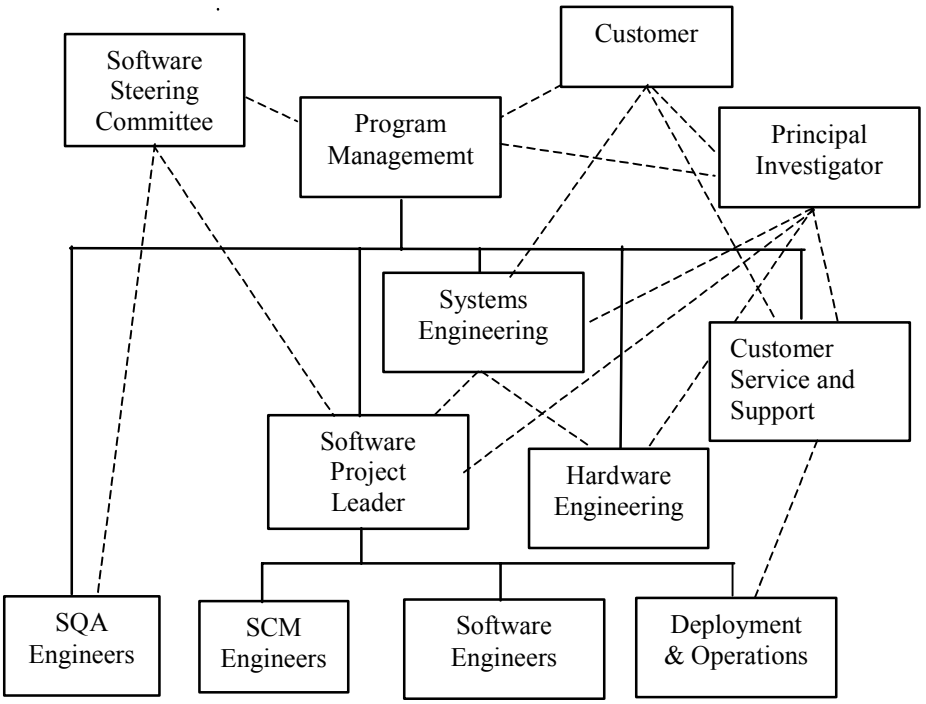

Fig. 2-1 Organization Chart for Project XYZ

2.2 Project Roles and Responsibilities

Identifies the individuals responsible for each major project role and activity.

The standard responsibilities of the generic roles shown in the organization chart are defined in the PE Process Definition [2]. In that document, the responsibilities are defined in terms of the activities that make up the standard PSE/VIEWS process. The table below identifies the project personnel who serve in the generic roles for this project.

Since this project uses a modified version of the standard process activities, and the project organization is different from the standard organization, this project may or may not involve all of the standard roles and responsibilities. Any Project XYZ variations are identified in the table below.

Standard Role	Assigned Project XYZ Personnel	Variations From Standard Responsibilities, If Applicable
Program Manager(s)		
Principal Investigator (PI)		
Systems Engineer		
Project Leader		
Software Engineer(s)		
Deployment Team		
Technology Groups		
SQA Engineer		
SCM Engineer		
Customer Service and Support		

Table 2-1 Project XYZ Product Engineering Responsibilities

3 PROJECT MANAGEMENT

This section describes how the project will be managed. It defines:
- *the project's objectives,*
- *assumptions, dependencies and constraints,*
- *how risks will be managed,*
- *how the project will be staffed,*
- *and how project progress will be monitored, controlled, and reported.*

3.1 Project Objectives

Describes the project's objectives and goals. Discusses the relative priorities of budget, schedule, and requirements.

3.2 Assumptions, Dependencies and Constraints

States the assumptions on which the project is based, the external events upon which it is dependent, and any constraints under which the project is to be conducted.

3.3 Risk Management

Identifies any risk factors associated with the project. Risk factors that should be considered are:
- *Technical Risks*
- *Risks due to size and complexity of the design or product*

- *Personnel Risks (hiring, retention, etc.)*
- *Contractual Risks*
- *Risks in achieving customer acceptance*

A strategy or a proposed action should be described for controlling or mitigating each of the identified risks. One way would be to use a table (provided as an option below) with a row for each identified risk with a column that defines the risk and a column that describes the controlling action. Alternatively, a 3.3.n subsection could be used for each risk n with a paragraph to describe the risk and a paragraph to describe the controlling action(s).

The XYZ Project recognizes the risks factors described in the table below.

	Risk	Control or Mitigation Action(s)
1		
2		
3		

3.4 Project Control

Describes how the project is monitored and controlled. Reporting mechanisms, report formats, information flows, review and audit mechanisms, and other project control tools and techniques should be identified here.

3.5 Staffing

Identifies the numbers and types of personnel required to conduct the project.

4 TECHNICAL METHODS and TOOLS

Describes the technical tools, methods, and techniques to be used in the project; these include software programs, development methods, analytical tools and techniques, design tools, automated test tools, modeling languages, etc.

This section describes the technical methods, tools, and techniques to be used on this project.

5 PROJECT TASKS, SCHEDULE and ESTIMATES

This section specifies the project activities, tasks, resource requirements, and schedules required for the project.

Note - There are many effective ways that this section could be organized depending on the preferences of the author and the kinds of tools that might be used to document project plans. Much of the project planning and scheduling information could be placed in the appendices of this document or in external files and be referenced from this

section. For that reason, the topics to be addressed in this section are listed and defined in these guidelines, but the format of the section is the choice of the author.

This section describes a plan for carrying out the project activities and tasks. Project activities may be variations of the standard process activities that are defined in the PSE/VIEWS Process Definition documents. The project-specific variations of the process are described in sections 6, 7, and 8 of this SDP.

The terms "process, activity and task" have many different interpretations in the industry. The IEEE definitions are assumed here. Absolute definitions are impractical, but in general, processes are made up of activities, and activities are made up of tasks.

Keep in mind that the project-specific processes, activities and tasks that have been "tailored" to fit a particular project are usually different than the "standard" processes, activities and tasks. All of the activities and tasks described or referred to in the following subsections are those that have been tailored to fit project XYZ.

***Project Tasks** - Describes the activities and tasks of the project. These should be uniquely identified. The identified tasks should correspond to the project development process activities and tasks that are defined in sections 6,7, and 8.*

***Dependencies** - Specifies the interdependencies of the project tasks and dependencies on external events. Techniques such as dependency lists, critical path networks, and activity networks, may be used here to describe these relationships.*

***Resource Requirements** - Provides, as a function of time, estimates of the total resources that are required to complete the project. Numbers and types of personnel, computer time, support software, computer hardware, office and laboratory facilities, travel, etc. are typical resources specified in this subsection.*

***Budget and Resource Allocation** - Allocates the budget and resource requirements to specific tasks, work packages, etc.*

***Schedule** - The project schedule is presented in this subsection, taking into account the precedence relationships and required milestones of the project.*

6 PROJECT XYZ PROCESS OVERVIEW

The PSE/VIEWS Product Engineering (PE) Process Definition describes a standard process for software development and maintenance that can help projects efficiently develop high quality software and meet ASCI Program Goals. Because this SDP tailors the standard process to fit the realities and constraints of this project, there are some differences between the project development activities described in this SDP and the standard activities defined in the Product Engineering Process Definition. The tailoring is consistent with PSE/VIEWS guidelines and with the SDP approval process outlined in the Product Engineering [2], the Project Planning, [12], and the Project Tracking [13] Process Definition documents. Unless stated otherwise, the practices

specified in those Process Definition documents are included in this project plan and shall be performed by this project.

The PSE/VIEWS Product Engineering Process Definition defines a generic process and life cycle model that can be adapted to any of the practical software development process models that are commonly used in the industry. If a specific, formal, and well-defined software engineering process model or product life-cycle model is used for this project that is different than the generic PSE/VIEWS model, the name of the model and its essential characteristics should be identified here. Such alternative models are acceptable if they provide the software process capabilities that are prescribed by the PSE/VIEWS Process Definitions.

6.1 Types of Process Activities

As defined in the PE Process Definition, there are two basic types of activities (i.e. subprocesses) that make up the PSE/VIEWS process.

- *Phase-Oriented Activities* - the process activities that are primarily associated with a distinct step of the development or operation phases such as: design, coding, module testing, or validation testing.
- *Integral Process Activities* - the process activities that span the development and operation phases, including software quality assurance (SQA), software configuration management (SCM), Requirements Management and Peer Reviews.

The tailoring of the PSE/VIEWS Phase-Oriented and Integral process activities to fit this project are described in detail in sections 7 and 8 respectively, and summarized in Table 6-1 below. The tailoring of SQA and SCM activities to this project are described in the Project XYZ SQA Plan [6] and the Project XYZ SCM Plan [7].

For various practical reasons, the SQAP and SCMP are separate documents. Logically they are subordinate components of this SDP. The SQAP and SCMP serve the same project planning and process tailoring purposes for SQA and SCM as does this SDP for other PE activities.

6.2 Table of Project XYZ Process Activities

The table that follows summarizes the process activities and outputs that are performed on this project. The table shows how the *standard* activities and outputs (that are defined in the PSE/VIEWS Product Engineering process) are tailored and applied to this project. A more detailed description of each of the project activities is provided in sections 7 and 8.

In the table below, the manner in which the standard process is tailored and applied to this project is indicated as follows.

Y - the standard activity is fully implemented.
N - the standard activity is not applied or used on this project.
P - The standard activity is partially applied or modified on this project.

If applicable, the reasons for tailoring the standard process activities or outputs (in the manner indicated in the table) are provided in sections 7 and 8.

Table 6-1 - Summary of Process Activities and Outputs

	Phase-Oriented Process Activity		Output(s)	

1.	Product Definition	P	PRD - Product Requirements Definition	N
2.	Project Planning	Y	SDP - Software Development Plan	Y
			SQAP - SQA Plan	Y
			SCMP - SCM Plan	Y
3.	Requirements Definition	Y	SRD - System Requirements Description	N
			SRS - Software Requirements Specification	Y
4.	Architectural Design	Y	SDD - Software Design Description	Y
	Architectural Design Review		Results of reviews	Y
5.	Subsystem Design(s)	N	SDD(s)	N
	Subsystem Design Review(s)	N	Results of reviews	N
6.	Module Detailed Design(s)	Y	SDD(s)	P
	Module Design Review(s)	Y	Results of reviews	Y
7.	Module(s) coding	Y	Module Code	Y
	Module code review(s)	P	Results of Reviews	Y
8.	Module Testing	Y	Module Test Procedures and Testing Results	Y
9.	Integration and Testing	N	Integration Test Procedures and Testing Results	N
10.	System Testing	Y	System Test Procedures and Testing Results	Y
11.	Validation Testing	Y	Validation Test Procedures and Testing Results	Y
12.	Beta Release and Testing	N	Beta Test Procedures and Testing Results	N
13.	Customer Release and Operation	Y	Software Release Description	P
			User Documentation	P
	Integral Process Activity		**Output(s)**	
1.	Requirements Management	P	SRS	P
		N	Requirements Management Table (RMT)	N
2.	Project Management	P	SDP	Y
3.	SQA - Software Quality Assurance *	P	SQA Plan, Audit Reports, Status Reports *	P
4.	Reviews	P	Design and Code Review Reports	P
5.	SCM - Software Configuration	Y	SCM Plan, Repository, Audit Reports, Status	P
	Management *		Reports, Problem Reports, Change Requests *	

***** The tailoring of standard SQA and SCM activities, and the implementation of tailored activities on this project are described in the Project XYZ SQAP [5] and the Project XYZ SCMP [6].

6.3 Process Documentation

The documentation items to be produced by this project are identified above in table 6-1 as output(s) from the appropriate activities. The meaning and use of each of the PSE/VIEWS standard documents are described in the PE Process Definition.

If applicable, Project XYZ documents that are different from the standard documents are identified and defined in this section. Also, an additional explanation of how specific XYZ documents differ from the standard documents could be provided in sections 7 and 8, which describe the activities that produce the documents.

The document set which is produced by project XYZ, differs from the standard set of documents (described in the PE Process Definition) as follows.

7 PHASE-ORIENTED PROCESS ACTIVITIES

This section describes how the standard activities are tailored and implemented on Project XYZ, consistent with the summary in Table 6-1. A number of typical options for describing the tailoring are made available in this template. In most cases, the author could use one of the following optional statements.

1) The standard ____ activity is implemented.
2) The standard ____ activity is not implemented because...
3) The standard ____ activity is implemented with the following variations.

If option 3 is used, the author may provide an original description of the activity as it is practiced on this project, or the project modifications to the corresponding standard activity could be described.

This section describes how the standard phase-oriented process activities (i.e. the process activities defined and recommended in the PSE/VIEWS Product Engineering Process Definitions) are tailored and applied to this project.

7.1 Product Definition

The standard Product Definition activity is implemented with the following variations.

7.2 Project Planning

7.2.1 Prepare Software Development Plan (SDP)

This section describes the method used to prepare this SDP. The standard methods and practices are described in the Product Engineering Process Definition [2] and the Project Planning Process Definition [12].

The standard Software Development Planning activity is performed with the following variations.

7.2.2 Prepare Software Quality Assurance Plan (SQAP)

The standard SQA Planning activity, which is described in the PSE/VIEWS SQA Process Definition, is performed as described in the Project XYZ SQA Plan.

7.2.3 Prepare Software Configuration Management Plan (SCMP)

The standard SCM Planning activity, which is described in the PSE/VIEWS SCM Process Definition, is performed as described in the Project XYZ SCM Plan.

7.3 Requirements Definition

The standard Requirements Definition activity (i.e. the preparation of a SRS) is briefly described in the Product Engineering Process Definition and is prescribed in the Requirements Management Process Definition [9]. The tailoring (if any) and implementation of this activity is described in section 8.1 below.

7.4 Architectural Design

The standard Architectural Design activity is implemented with the following variations.

7.5 Detailed Design

The standard Detailed Design activity is implemented with the following variations.

7.6 Module Coding (Programming)

The standard Module Coding activity is implemented with the following variations.

7.7 Module Testing

The standard Module Testing activity is implemented with the following variations.

7.8 Integration Testing

The standard Integration Testing activity is implemented with the following variations.

7.9 System Testing

The standard System Testing activity is implemented with the following variations.

7.10 Validation Testing

The standard Validation Testing activity is implemented with the following variations.

7.11 Beta Testing

The standard Beta Testing activity is implemented with the following variations.

7.12 Scientific Validation Testing

The standard Scientific Validation Testing activity is not required because Validation testing is performed and is sufficient for this project.

7.13 Software Release and Deployment

The standard Release and Deployment activity is implemented with the following variations.

7.14 Operation and Maintenance

The standard Operation and Maintenance activity is implemented with the following variations.

8 INTEGRAL PROCESS ACTIVITIES

This section describes the tailoring and project implementation of the process activities that are "integral" to the full life cycle. These activities are performed throughout the software development and operation phases of this project.

This section describes how the *standard* Integral process activities (i.e. the Integral process activities that are defined and recommended in the PSE/VIEWS Product Engineering Process Definitions) are tailored and applied to this project.

This section describes how the standard Integral process activities are tailored and implemented on Project XYZ. The tailoring of the activities and outputs is summarized in Table 6-1. A number of typical options for describing the tailoring are made available in this template. In most cases, the author can choose one of the following optional statements.

1) The standard ____ activity is implemented.
2) The standard ____ activity is not implemented because....

3) The standard ____ activity is implemented with the following variations.

If option 3 is used, the author may provide an original description of the activity as it is practiced on this project, or the project modifications to the corresponding standard activity could be described.

8.1 Requirements Management

The *standard* PSE/VIEWS Requirements Management (RM) activities are described in the PSE/VIEWS Requirements Management Process Definition [9]. The RM activities included in this section correspond closely to the Phase-Oriented PE activities because actions and practices that support and carry out RM are integrated into most of the product engineering activities. This section focuses on the tasks that are particularly related to RM. The standard RM related activities described in section 3 of the RM Process Definition are tailored to this project as follows.

Note - *The following 8.1.x subsection headers are provided for the convenience of the author of this plan. The author may choose to omit these subsections and to simply state only the variations from the activities in section 3 of the RM Process Definition and to organize this section accordingly.*

8.1.1 RM and Product Definition

The standard RM related activities are implemented with the following variations.

8.1.2 RM and Project Planning

The standard RM related activities are implemented with the following variations.

8.1.3 RM and Requirements Definition

The standard RM related activities are implemented with the following variations.

8.1.4 RM and Design

The standard RM related activities are implemented with the following variations.

8.1.5 RM and Unit/Module Coding

The standard RM related activities are implemented with the following variations.

8.1.6 RM and Verification Testing

Verification testing includes both unit/module testing and integration testing.

The standard RM related activities are implemented with the following variations.

8.1.7 RM and Validation

The standard RM related activities are implemented with the following variations.

8.1.8 RM and Change Management

The standard RM related activities are implemented with the following variations.

8.1.9 RM Documentation

The standard RM related activities are implemented with the following variations.

8.1.10 RM Responsibilities

The RM roles defined in the RM Process Definition are assigned to Project XYZ personnel as stated in section 2.2 of this SDP with the following variations.

8.2 Project Management

The PSE/VIEWS standard Project Management activities are prescribed in the Product Engineering Process Definition [2], Project Planning Process Definition [12], and Project Tracking Process Definition [13].

8.2.1 Project Planning

The standard Project Planning activities are implemented with the following variations.

8.2.2 Project Tracking and Control

The standard Project Tracking activities are implemented with the following variations.

8.3 Software Quality Assurance

The standard SQA activities are described in the PSE/VIEWS SQA Process Definition [1].

The Project XYZ SQAP Plan [5] describes how the standard SQA activities are tailored and applied to this project.

8.4 Reviews and Audits

This section identifies the reviews and audits that will be conducted for project XYZ. The basic method to be used for each identified review is also described.

This section identifies the reviews and audits that will be performed for this project. The review method or procedure should be described for each type of review. The standard "Peer Review method" could be referred to as the review method used for each review, or a different method that is a modification of the standard peer review method could be described. Section 8.4.4 could be used to describe how the standard peer review method is adapted to this project.

If the project has an informal method of conducting reviews that is used frequently, the author could choose to simplify this section by defining a "Project XYZ Informal Review Method" in an optional section 8.4.5, and then referring to that method by name instead of repeating the description of the method for every review.

Using SRS reviews as an example, a statement like one of the following could be used in section 8.4.2 for each review in the list of technical reviews that will be performed:

- Requirements Reviews of the SRS using the Peer Review method.
- Requirements Reviews of the SRS using the Project XYZ Informal Review method.
- Requirements Reviews of the SRS using an informal discussion among the Project Leader and Customers.

Alternatively, a table could be used with a row for each review with column 1 identifying the review, and column 2 identifying the review method.

Some of the reviews use the standard Peer Review method described in the PSE/VIEWS Process Definition. Some reviews use a modified version of the standard Peer Review method. The

modified Peer Review method is described in section 8.4.4. Some reviews use an informal review process that is unique to this project. The method used for conducting the informal project XYZ reviews is described in section 8.4.5.

8.4.1 Management Reviews

The following management reviews will be performed and conducted as described below.

.

- Software Development Plan reviews using...
- Budget and Schedule reviews using...
- SQA Plan reviews using...
- SCM Plan reviews using...
- Validation Test Plan reviews using...
- SQA Status reviews using...
- SCM Status reviews using...
- Release review using...
- Risk Management reviews using...

8.4.2 Technical Reviews

- Requirements Reviews of the PRD and SRS using...
- Architectural Design Reviews of the SDDs using...
- Detailed design reviews of the SDD(s) using...
- Code reviews of selected Modules using...

The following technical work products will be informally reviewed or examined by the Project Leader.

- Module Test Procedures and module testing results.
- Integration Test Procedures and integration testing results.
- Validation Test Procedures and validation testing results.

8.4.3 Audits

The following audits will be conducted.

- SQA Audits
- SCM Audits

8.4.4 Peer Review Methods

The standard Peer Review activities and practices are described in the PSE/VIEWS Process Definition [3].

The peer review methods described in that document will be applied to this project with the following variations.

8.4.5 The Project XYZ Informal Review Method

Project XYZ conducts informal reviews as follows.

8.5 Software Configuration Management

Software Configuration Management (SCM) practices, including change management, are described in the PSE/VIEWS Software Configuration Management Process Definition [7]. The PSE/VIEWS SCM Process Definition defines and recommends standard activities for:

- controlling and identifying software programs and documentation,
- controlling and identifying the specific software component versions which comprise each released software package, and
- controlling and recording changes to software components and associated documentation.

The PSE/VIEWS SCM process includes Software Change Management, Problem Reporting and Tracking, and Software Archival.

The Project XYZ SCM Plan [6] describes how the standard SCM activities are tailored and applied to this project.

9 METRICS and MEASUREMENTS

This section describes the quality and process measurements that will be obtained for this project and specifies the metric data that is to be collected in order to derive the measurement.

9.1 Technical Product Quality

- Maintainability - the amount of effort that is necessary to change or repair the software. Portability - the effort or difficulty to transfer to different hardware/software platform.
- Reliability - the capability to perform function correctly for specified time.
- Usability - the effort required to prepare for use or to use.
- Complexity – the complexity of relationships between components.
- Correctness – the consistency of results with specification.

9.2 Process Quality

- Defects discovered per testing phase (normalized by the amount of software and the level of testing effort).
- Defects discovered per review or inspection.
- Cumulative defects discovered per release across life cycle.
- Cumulative defects corrected per release across life cycle.
- Defects discovered per unit time during customer use.

10 APPENDICES

This section could contain schedules, tables, figures, block diagrams, etc., that are referred to in this document but are not included in the referencing sections themselves.